

## ■ GENERAL DESCRIPTION

The NJM2147 is a dual high voltage and Low power operational amplifier IC.

The feature of high operating voltage is suitable for high supply voltage items, such as PBX, and others.

## ■ PACKAGE OUTLINE



NJM2147D

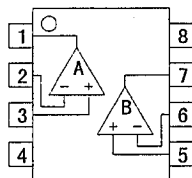


NJM2147M

## ■ FEATURES

- High Operating Voltage ( $\pm 8V \sim \pm 28V$ )
- High Slew Rate ( $0.5V/\mu s$  typ.)
- Low Operating Current ( $175\mu A$  typ.)
- Short-Circuit Protection
- Package Outline DIP8, DMP8
- Bipolar Technology

## ■ PIN CONFIGURATION



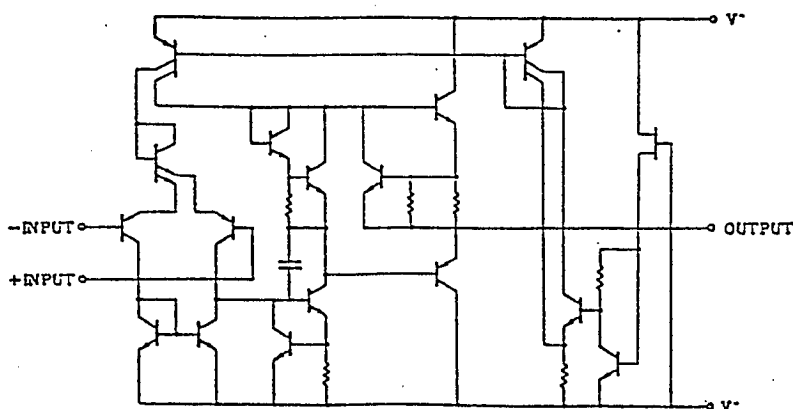
NJM2147D

NJM2147M

## PIN FUNCTION

1. A OUTPUT
2. A -INPUT
3. A +INPUT
4.  $V^-$
5. B +INPUT
6. B -INPUT
7. B OUTPUT
8.  $V^+$

## ■ EQUIVALENT CIRCUIT



## ■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

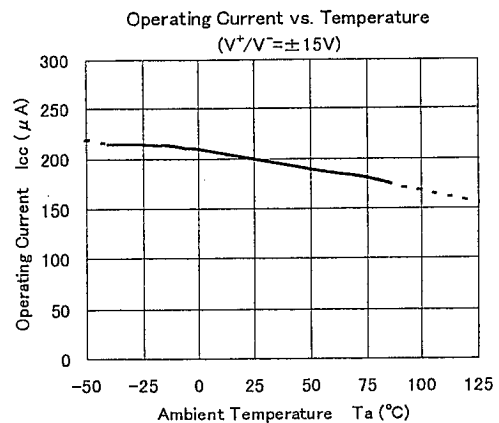
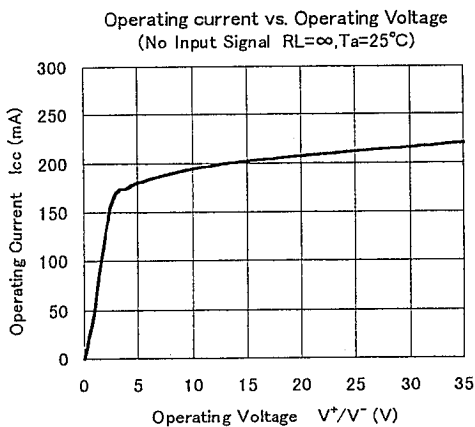
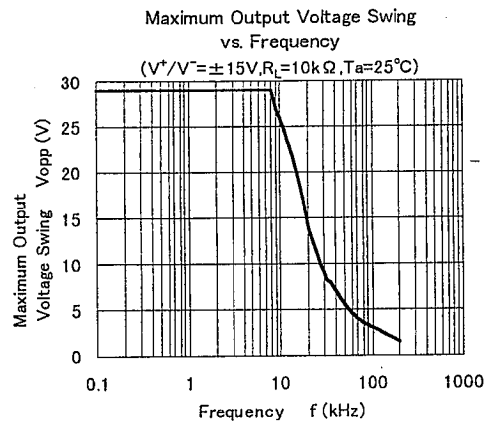
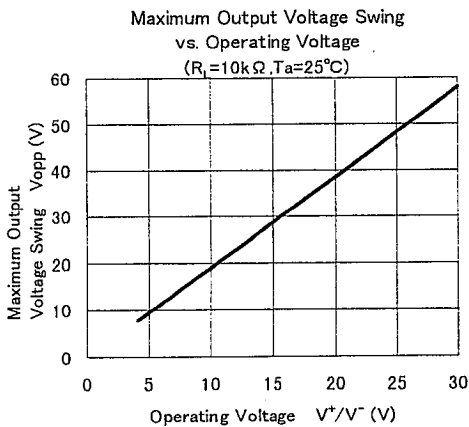
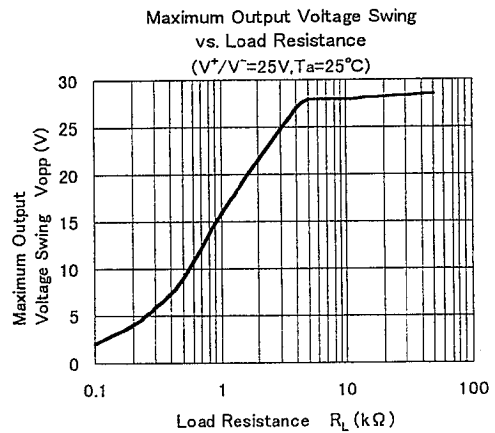
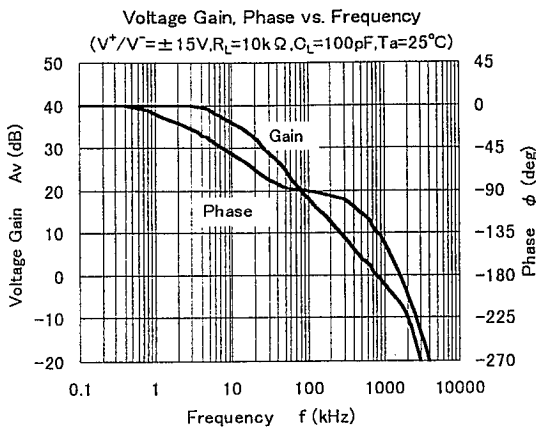
PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V^+/V^-$	$\pm 30$	V
Input Voltage	$V_{IC}$	$\pm 28$ (note)	V
Differential Input Voltage	$V_{ID}$	$\pm 30$	V
Power Dissipation	$P_D$	(DIP8) 500 (DMP8) 300	mW
Operating Temperature Range	$T_{OP}$	-40 ~ +85	°C
Storage Temperature Range	$T_{STG}$	-40 ~ +125	°C

(note) When supply voltage is less than  $\pm 15V$ ,  
the absolute maximum input voltage is equal supply voltage.

## ■ ELECTRICAL CHARACTERISTICS ( $V^+/V^-=\pm 15V$ , Ta=25°C)

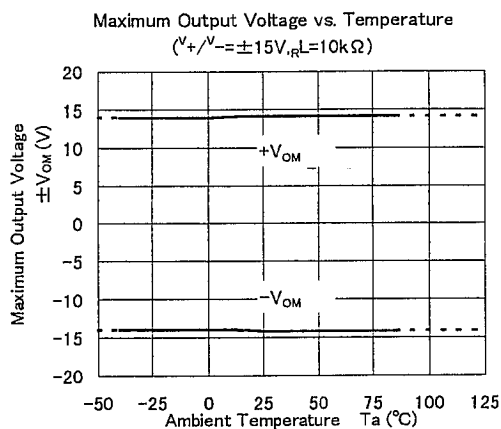
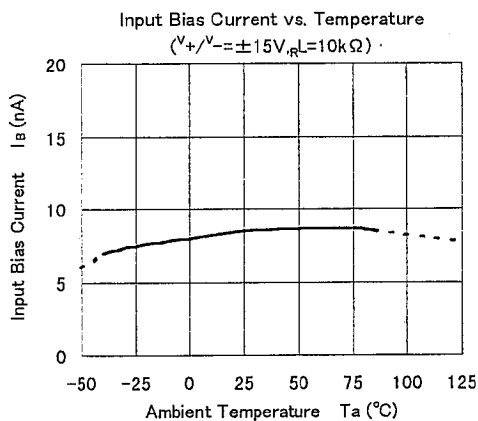
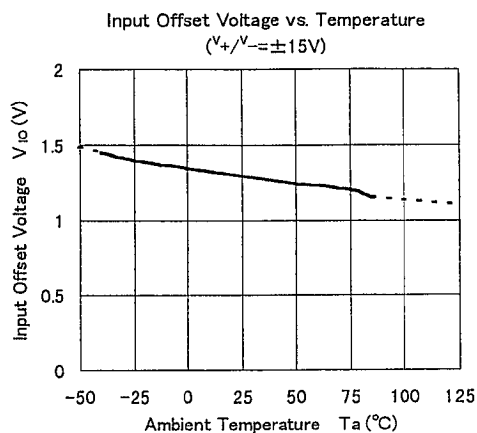
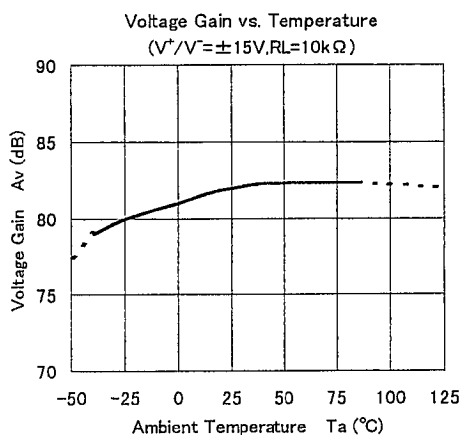
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Voltage	$V^+$		$\pm 8$	$\pm 15$	$\pm 28$	V
Input Offset Voltage	$V_{IO}$	$R_s \leq 10k\Omega$	—	1.0	5.0	mV
Input Bias Current	$I_B$		—	15	250	nA
Input Offset Voltage	$I_{IO}$		—	1	80	nA
Large Signal Voltage Gain	$A_V$	$R_L \geq 10k\Omega$ , $V_O = \pm 10V$	60	88	—	dB
Input Common Mode	$V_{ICM}$		$\pm 12$	$\pm 13$	—	V
Voltage Range						
Common Mode	CMR	$R_s \leq 10k\Omega$ , $V_{IC} = \pm 12V$	60	90	—	dB
Rejection Ratio						
Supply Voltage	SVR	$R_s \leq 10k\Omega$ , $V^+/V^- = \pm 14V \sim \pm 28V$	74	110	—	dB
Rejection Ratio						
Maximum Peak-to-peak	$V_{OM1}$	$R_L \geq 10k\Omega$	$\pm 10$	$\pm 14$	—	V
Output Voltage Swing 1						
Maximum Peak-to-peak	$V_{OM2}$	$R_L \geq 50k\Omega$	$\pm 13$	$\pm 14$	—	V
Output Voltage Swing 2						
Operating Current	$I_{CC}$	$R_L = \infty$ (All Circuit)	—	175	300	$\mu A$
Short-circuit	$I_{OS}$		—	$\pm 6$	—	mA
Output Current						
Slew Rate	SR	$R_L = 10k\Omega$ , $C_L = 100pF$ , $V_{IN} = 10V$	—	0.5	—	V/ $\mu s$
Response Time (Rise Time)	$t_R$	$R_L = 10k\Omega$ , $C_L = 100pF$ , $V_{IN} = 20mV$	—	0.3	—	$\mu s$
Equivalent Input	$e_n$	$A_V = 20dB$ , $f = 1kHz$	—	50	—	$nV/\sqrt{Hz}$
Noise Voltage						

■ TYPICAL CHARACTERISTICS



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## TYPICAL CHARACTERISTICS



MEMO

[CAUTION]  
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